It is proposed to issue the collected papers in two quarto volumes of about 450 pages each. The volumes will contain a portrait of Lord Lister, and will be prefaced by a short account of the development of Lister's ideas and work and their relation to the growth of knowledge of infectious processes. They will be published at a subscription price of one guinea for the two volumes.

NOTES.

Sir James Dewar has been appointed a corresponding member of the Royal Academy of Sciences, Denmark.

The U.S. Congress has voted 20,000*l.* for the erection of a monument to Christopher Columbus at Washington.

Prof. S. P. Thompson, F.R.S., has been elected a member of the Athenæum Club under the provisions of the rule which empowers the annual election by the committee of three persons "of distinguished eminence in science, literature, the arts, or for public services."

Mr. J. de Graaf Hunter, assistant in the physics department of the National Physical Laboratory, has been nominated by the India Office to the post of mathematical expert to the Survey of India.

The monument erected by subscription in the garden of the Paris Institut national agronomique to Eugène Risler, the director of the institute from 1879 to 1900, was unveiled by M. Ruau, the French Minister of Agriculture, on March 24.

The *British Medical Journal* states that a laboratory for the study of human nutrition is to be built by the Carnegie Institute of Washington on a site adjacent to the Harvard Medical School. The work will be under the direction of Prof. F. G. Benedict, of Wesleyan University.

In many places the rainfall measured already this month is greatly in excess of the aggregate measurement for the whole of March. On the night of April 6–7 there was a somewhat heavy fall of snow over the south of England, and at Warlingham, in Surrey, the ground was covered to the depth of 6 inches. In London, snow fell for some time in the early morning of Sunday, April 7, and the rainfall as yet this month already exceeds an inch. Thunderstorms have also occurred in different parts of the country. Notwithstanding that the aggregate rainfall at Greenwich for the first three months of the year was deficient by 1·63 inches, the total for the six winter months, October–March, was 0·75 inch in excess of the average for the past sixty years.

The earthquake at Bitlis on March 29, briefly recorded in last week's Nature, appears to have been of unusual severity, and was registered by seismographs at several distant stations. The earthquake occurred at 10 a.m. on March 29, no fewer than fourteen severe shocks being felt on that day. Shocks stronger than the first were felt at Bitlis all night on March 31, resulting in fresh casualties and further destruction of houses. Violent shocks of earthquake were felt on April 2 in the island of San Miguel, Azores, particularly in the town of Villa Franca, which was formerly destroyed by earthquake.

The two Royal medals of the Royal Geographical Society have been awarded, with the King's approval, to Dr. Francisco Moreno, who for more than twenty years has been personally occupied in the work of South American exploration, and Captain Roald Amundsen, the Norwegian explorer, who recently completed the North-west Passage for the first time in a ship, and made observations in the neighbourhood of the North Magnetic Pole. The Murchison bequest of the society has been awarded to Captain G. E. Smith, for his various surveys in British East Africa; the Gill memorial to Mr. C. Raymond Beazley, for his work in three volumes on "The Dawn of Modern Geography"; the Back bequest to Mr. C. E. Moss, for his researches on the geographical distribution of vegetation in England; and the Cuthbert Peek fund to Major C. W. Gwynn, C.M.G., R.E., for the geographical and cartographical work carried out by him in the Blue Nile region and on the proposed Sudan-Abyssinian frontier.

To the long list of eminent men of science that have lately been lost to France by death must be added the name of Colonel Laussedat, for many years the director of the Conservatoire des Arts et Métiers. More than sixty years ago he began his public career in the École Polytechnique, and his long life was one of successful achievement. He served his country both in the field and in the study. During the siege of Paris he had charge of the optical contrivances for maintaining communications with the outside world, and later, at the close of the war, he was a member of the commission for arranging the new frontiers of the country. Besides filling the office of professor of geodesy, he was at different times member of many committees and numerous commissions, where his experience, knowledge, and ingenuity were gratefully acknowledged. But it is in the department of photography and in its applications to scientific purposes that he will be longest remembered. If he did not originate the application of photography to surveying and photogrammetric inquiries, he so encouraged its employment, improved its methods, and demonstrated its usefulness that he won for it a foremost place in the training of every modern topographer. Colonel Laussedat was a member of the French Academy and of many learned societies in his own and other countries.

As previously announced, the annual meeting of the Iron and Steel Institute will be held on May 9 and 10. At the opening meeting, the retiring president, Mr. R. A. Hadfield, will induct into the chair the president-elect, Sir Hugh Bell, Bart., the Bessemer gold medal for 1907 will be presented to Mr. J. A. Brinell (Stockholm), and the president will deliver his inaugural address. Among the papers to be submitted on May 9 and 10 are the following:—The use of steam in gas-producer practice, Prof. W. A. Bone, F.R.S., and R. V. Wheeler; the influence of process of manufacture on some of the properties of steel, F. W. Harbord; the ageing of mild steel, C. E. Stromeyer; carbon-tungsten steels, T. Swinden; the nomenclature of iron and steel, report of a committee of the International Association for Testing Materials. Reports on research work carried out during the past year will be submitted by C. A. F. Benedicks (Sweden), O. Stutzer (Germany), E. F. Law (London), E. Hess (United States), P. Breuil (Paris), H. C. Boynton (United States), L. Guillet (France), W. H. Hatfield (Sheffield), A. Campion (Glasgow), E. G. L. Roberts (London), E. A. Wraight (London), and W. Rosenhain (Teddington), Carnegie research scholars. The annual dinner of the institute will be held in the Grand Hall of the Hotel Cecil on May 10, under the presidency of Sir Hugh Bell, Bart. The council has accepted an invitation to hold the autumn meeting of the institute in Vienna on September 23–25. After the meeting there will be alternative excursions to

Bohemia and Styria, by invitation of the Prague Iron Industry Company and the Austrian Alpine Mining Company respectively. An invitation has also been received from the Witkowitz Mining and Ironworks Company to visit their works.

In an elegant little pamphlet entitled the "Birdland Booklet," Messrs. Sanders and Crowhurst direct the attention of amateur photographers to the advantages of their reflex birdland camera.

Most of the articles in Nos. 5 and 6 of the *Bulletin International de l'Académie des Sciences de Cracovie* for 1906 relate to physiological and chemical subjects, but Mr. Vl. Kulczynski contributes a continuation of an account of certain arachnid groups, dealing in this instance with the European representatives of the genus Amaurobius. The article, which is in Latin, is illustrated with two plates, and contains descriptions of twenty species, one of these being new.

A specimen of the so-called "sea-mignonette" (*Primnoa reseda*), dredged in the Færöe Channel, has enabled Prof. J. A. Thomson, in the Proceedings of the Royal Physical Society of Edinburgh, vol. xvii., No. 2, to state that this gorgonian is one of the most gorgeously coloured members of the British fauna, being naturally a brilliant salmon-pink, although the tints rapidly fade after exposure to light. Prof. Thomson has also discovered that this species, the only member of its genus, is viviparous.

The appearance of the first part of a work entitled "The Book of the Open Air," edited by Mr. Edward Thomas and published by Messrs. Hodder and Stoughton, may apparently be taken as an indication of an increasing appetite on the part of a considerable section of the public for anything connected with country life and popular natural history. The illustrations, of which fifty are promised, are all to be coloured, and the work is to be completed in a dozen shilling parts. The illustrations of scenery in this part are simply exquisite, and, even though the naturalist may consider those of animals a little too "artistic" in colouring, if the present standard is maintained the volume will be a marvel of cheapness. The names of Messrs. W. H. Hudson and J. C. Tregarthen are alone sufficient to indicate that the letterpress will not be deficient in interest.

The list of New Guinea mammals published by Dr. F. A. Jentink in vol. xxviii. (pp. 161 *et seq.*) of Notes from the Leyden Museum presents a remarkable contrast in point of extent to those in most text-books, comprising no less than 127 species and subspecies. The number recognised by Dr. Wallace in his "Malay Archipelago" (1869) is, for instance, only seventeen, while even so late as 1897 Dr. K. M. Heller could enumerate not more than seventy species from the whole of the Papuan Islands. Probably a few of the forms entered in Dr. Jentink's list are not entitled even to subspecific rank, but, discounting this, the length of the list is sufficient to refute the old idea that New Guinea is very poor in mammals. As to the future, the author is of opinion that exploration of the practically unknown mountain interior of New Guinea —a country larger than Borneo, and double the size of Great Britain—will probably yield a number of new forms.

The latest issue (vol. iv., parts xiv. and xv., published together) of *Spolia Zeylanica* contains an illustrated account by Dr. Günther Enderlein of a large number of new minute insects belonging to the same group of Neuroptera as the European book-lice and death-watches. The few Ceylonese forms previously known were chiefly those described by Hagen in the years 1858 and 1859, but Dr. Enderlein has been enabled to reveal the existence of quite a host of these tiny insects, referable to a number of new generic types. In place of grouping all these "scaly-winged Copeognatha" in the single family Psocidæ, as is done by Dr. David Sharp, the author refers them to three distinct families, confined almost exclusively to the tropics, the only exceptions being one species from Japan and two from North America. Of the nineteen recognised genera, fourteen are named by Dr. Enderlein. In general appearance and the beauty of the pattern and colouring of their scale-clad wings (exquisitely shown in the coloured plates illustrating the memoir), these insects recall the Microlepidoptera. The use of the term "woodlice" as their popular designation is, as the editor of *Spolia Zeylanica* points out, barred by the employment of that name in another sense.

A very important paper, by Profs. J. T. Wilson and J. P. Hill, on the fœtal dentition of the Australian duck-bill, or platypus (Ornithorhynchus), is published in the February issue, vol. li., part i., of the *Quarterly Journal of Microscopical Science*. The authors announce the discovery of tooth-germs belonging to at least two distinct dentitions. What may be called the second dentitions seems to comprise five pairs of teeth in each jaw. Of these, the last three clearly have deciduous predecessors, and they may therefore be regarded as molars, while if such predecessors are absent in the two anterior teeth (a point not yet definitely ascertained), these will be premolars. It is noteworthy that of the three functional teeth in the upper jaw, the first, and smallest, pair belongs to this presumed premolar series, which is unrepresented in the functional lower teeth. Very noteworthy is the discovery that the vestigial precursors of the large functional molars take the form of a much more numerous series of dental rudiments, each corresponding approximately with one of the cusps of their complex successors. "The mode of development of the successional molars . . . is decisive against the occurrence of any fusion-process; but the relation of the two series in the molar region cannot but be regarded as suggestive of some sort of phylogenetic substitution of a small number of compound teeth for a large number of simple teeth—a process which must be reckoned as covering the fundamental idea of concrescence."

The Board of Agriculture and Fisheries has published a new edition of the leaflet on the black currant mite, in which information on the treatment of this pest with lime and sulphur has been incorporated. Fruit growers whose bushes have been attacked with the mite are advised to experiment with this process. Copies of the leaflet may be obtained gratis and post free on application to the Secretary of the Board of Agriculture and Fisheries, 4 Whitehall Place, London, S.W. Letters so addressed need not be stamped.

The general conclusions derived from former attempts to grow the opium poppy with a view to the production of alkaloids have been adverse to the profitable cultivation of the plant in Europe. A recent experiment made by Dr. H. Thoms at Dahlem, near Berlin, of which an account is published in *Berichte der deutschen pharmazeutischen Gesellschaft*, vol. xvii., promises no better. The fruits of German varieties gave considerably higher yields than the fruits of plants raised from imported Asiatic seed, but the cost of labour proved prohibitive; further, the yield was found to be uncertain.

Whether it is regarded as an exposition of the new rules for botanical nomenclature or as an authentic revision, the thanks of the botanical community are due to the trustees of the British Museum for publishing, and to Dr. A. B. Rendle and Mr. J. Britten for compiling, a list of British seed plants and ferns to conform with the decisions adopted at Vienna in 1905. The sequence of orders follows Bentham's "Handbook"; the limitation of species is based on Messrs. Groves's revised edition of Babington's "Manual," while additional insertions correlate the names given in Bentham's "Handbook," Hooker's "Student's Flora," and the previous edition of Babington's "Manual." The form is similar to that of the London Catalogue, which it presumably will supplant.

While studying the subject of polymorphism in the Hymenomycetes, a basidiomycetous subclass of fungi, Mr. G. R. Lyman has added to our knowledge of subsidiary spore-forms. It was found that oidia are commonly developed upon the mycelia in the Polyporaceæ and Agaricaceæ, but rarely or never in the lower orders. Chlamydospores previously recorded for a few agarics and many of the Polyporaceæ were produced under cultivation on the mycelia of species of Corticium and some of the Hydnaceæ. Conidia were most frequently observed in the Thelephoraceæ. Peculiar reproductive structures not unlike immature ascocarps, receiving the name of bulbils, were discovered in *Corticium alutaceum*, this being the first record for a basidiomycetous order. The paper is published in vol. xxxiii., No. 4, of the Proceedings of the Boston Society of Natural History.

The issue of *Irish Gardening* for the current month contains an article by Dr. G. H. Pethybridge on the American gooseberry-mildew in Ireland. This mildew (*Sphaerotheca mors uvae*) was the subject of an article in these columns on December 13 last (vol. lxxv., p. 160), and of a letter from Mr. E. S. Salmon in our issue for January 10 (vol. lxxv., p. 247). Dr. Pethybridge says that everyone who has come into working contact with the disease in Ireland admits its destructive nature. Last year nineteen counties out of Ireland's thirty-two had records of the disease, and the ninety-eight localities in which it has been reported since the first case in 1900 are indicated on a map accompanying the paper. There are now about 100 cases of the mildew in Ireland, and to state that the disease exists "in hundreds of gardens" in Ireland is an unnecessary exaggeration. The greatest stronghold of the disease is at present in the north-east of Ireland, more or less in the neighbourhood of the first outbreak, and many of these cases have undoubtedly arisen by the transference of the spores by natural agencies from one garden or plot to neighbouring ones. Corresponding to the increased number of cases during last summer, there has been an increased effort to eradicate the disease, especially by spur pruning and burning, and it is to be hoped that systematic spraying with potassium sulphide solution will be carried out in every garden or plot in which the disease existed last summer. In order to settle the question as to whether spraying is of use or not in combating the disease in Ireland, what is wanted is a carefully carried out set of experiments with the necessary controls, and Dr. Pethybridge understands that the Irish Department of Agriculture has such experiments in hand for the coming season.

The Home Office reports on the Wingate Grange colliery explosion on October 14, 1906, have been issued as a Blue-book (Cd. 3379). It is shown that the explosion, which caused forty-four deaths, was due to coal dust and not fire-damp, and that the cause of the explosion was a charge of geloxite, a permitted explosive, fired by means of a fuse. It is evident that, as coal mines are becoming deeper and drier, and larger areas are being worked from a pair of shafts, care should be taken to mitigate the dangers arising from the presence of coal dust. For this purpose steps should be immediately taken to make obligatory the removal of all coal dust from the in-take air ways and mechanical haulage roads of collieries. Attention is directed to the Blue-book by Mr. John Wilson, M.P., in his circular to the Durham Miners' Association, and also by Mr. Thomas Burt, M.P., in his monthly circular to the Northumberland Miners' Association.

The increasing application of electric power to mining operations was clearly shown in two papers by Mr. M. Kellow and Mr. A. H. Preece read before the Institution of Civil Engineers on March 26. Mr. Kellow described a hydroelectric plant containing many features of novelty installed at a Welsh slate mine. The scheme has been carried out in the Croesor and Cwmfoel valleys, in the vicinity of Snowdon, and includes all the essentials of a complete power system, it being the first example of so high a head of water as 860 feet being utilised in the United Kingdom. The advantages of the three-phase system as applied to slate mining were summarised, and the plant installed for mill-driving, winding, haulage, pumping, and lighting at the Croesor slate mine was described. In the second paper Mr. Preece dealt with electrically driven winding gear, and referred to various points relating to the cost of electric power in mines.

The Geological Survey of Canada has issued the annual report of the section of mines (No. 928), giving the completed and revised information descriptive of the mineral industries of Canada for 1904. The report has been drawn up by Mr. E. D. Ingall. The Geological Survey has also issued reports on the Chibougamau mining region in the northern part of the province of Quebec, by Mr. A. P. Low (No. 923), and on the Rossland mining district, British Columbia, by Mr. R. W. Brock (No. 939). The former, which covers sixty-one pages and is accompanied by a coloured geological map on a scale of four miles to the inch, records the discovery of an area of serpentine rocks containing asbestos of excellent quality, and the finding of a large vein of gold-bearing quartz and numerous indications of copper ore. The latter report, which is of a preliminary nature, clearly shows the development and progress of gold, copper, and silver mining in the Rossland district. We have also received a somewhat belated report (No. 908, Ottawa, 1905) on recent mineral discoveries on Windy Arm, Tagish Lake, Yukon, by Mr. R. G. McConnell. The deposits consist of quartz veins, the principal values in which are in silver.

A valuable paper on the testing of electric machinery and of materials for its construction, read by Prof. Epstein before the Institution of Electrical Engineers, is published in full in the last issue (vol. xxxviii., February) of the journal of the institution. The paper was the direct outcome of the information supplied to one of the Engineering Standards Committees during the last eighteen months by the author, and is exceptionally interesting from both the purely scientific and practical engineering points of view. Prof. Epstein describes fully the various methods of testing the materials used in the manufacture of electrical machinery, and the uses to which the results obtained in the laboratory are put in practical design. That these results must not always be blindly followed is shown by the fact that in some cases where the efficiency obtained in a laboratory test is very high, when the material tested is taken for practical use it is of no value for manufacturing purposes, owing perhaps to porosity or other defect. Consequently the paper is of special value in that the results of many years' work are given, thus providing what is probably the most accurate data for the design of modern electrical machinery. Every material used in the construction of the dynamos, motors, transformers, &c., of the present day has been scientifically tested, and the results are now classified. The various classes of iron, copper, carbon, and insulating material have been thoroughly sifted, so that efficient and commercial combinations have been secured.

From Messrs. Adam Hilger, Ltd., we have received a brief description of the 1907 model of their well-known wave-length spectroscope. The growing demand for these spectroscopes by education authorities, research workers, and technical experts has enabled the makers to add numerous improvements, and, from the description, the present model appears to be mechanically and optically ideal. The telescope and collimator have a focal length of 11¼ inches and an aperture of 1¼ inches. The prism-train effectively consists of two 30° prisms and one 90° reflecting prism, but is actually made in one piece. The bearing part of the screw on which is fixed the helical drum on which the wave-lengths are engraved is especially worked and hardened, and presses against a hardened steel plug the surface of which is optically polished; thus imperfect contacts and periodic errors are eliminated. These improvements have necessitated slightly increased prices, the present cost of the spectroscope with a prism of 1·65 refractive index, for D, being 25*l.*, and for a refractive index of 1·74 27*l.* 15*s.*

The Perkin memorial committee has issued as an attractive volume, appropriately bound in mauve, an account of the proceedings in connection with the International Celebration of the Coal-tar Colour Jubilee, with which we dealt in an article in our issue for August 2, 1906 (vol. lxxiv., p. 318), and in numerous notes published from time to time. The jubilee volume contains the special report by the *Times*, the whole of the telegrams, letters, and addresses received by Sir W. H. Perkin, F.R.S., several of the speeches made at the Royal Institution and at the dinner at the Hôtel Métropole, and a report of the celebrations held in America. It is illustrated by reproductions of the portraits of Sir W. H. Perkin and of his father and brother, views of the Greenford Green Works, and photographs of the oil portrait and marble bust presented to Sir W. H. Perkin by international subscription. The volume forms a fitting memento of an important and interesting event.

The coefficient of expansion of fused quartz is the subject of a paper by Mr. Howard Minchin in No. 1 of vol. xxiv. of the *Physical Review*; the determinations were made by the interference method over ranges of temperature between +16° C. and +1000° C., and the conclusion is drawn that between these limits expansion is uniform, the mean coefficient α having the value $0{\cdot}449 \times 10^{-6}$. In No. 1 of vol. ix. of the *Verhandlungen* of the German Physical Society, Dr. Karl Scheel publishes a communication from the Physikalisch-Technischen Reichsanstalt dealing with the expansion of crystalline quartz in the direction of the axis, and of platinum, palladium, and quartz glass between the temperatures of −190° C. and +100° C. These determinations were also made by the optical method. The coefficient of expansion of quartz glass is given by the equation

$$l_t = l_0(1 + 0{\cdot}217.10^{-6}.t + 0{\cdot}002379.10^{-6}.t^2),$$

and it is seen that, between the interval −190° C. and +16° C., instead of an expansion occurring, a contraction of 41 μ per metre is observed. The curve of expansion of quartz glass thus shows a minimum at a temperature of about −46° C.

A correspondent suggests that the passing allusion made to the collection of ship models in the Victoria and Albert Museum, in the review of Sir George Holmes's book in Nature of March 28 (p. 506), may lead readers to suppose that no models of warships are contained in the collection. As a matter of fact, there is a section devoted to warships, and including a number of models lent or given by private firms.

The first part of the third edition of Prof. M. Lévy's well-known work on "La Statique graphique et ses Applications aux Constructions" has been published by MM. Gauthier-Villars, Paris. Although some changes have been made, in details the work remains substantially the same. The part just received deals with the principles and applications of pure graphic statics, and is published in two volumes—one containing the text (pp. xxx+598) and the other (Plates xxv.) the figures.

In the second revised edition of "Die Spiele der Tiere," just published by Mr. Gustav Fischer, Jena, Prof. K. Groos has made numerous changes. The book is full of interesting incidents and explanations relating to the play of animals, and appeals both to the naturalist and psychologist. A translation of the original edition into English appeared in 1898, and was described in these columns (vol. lviii., p. 410).

Eight new volumes (Nos. 151–8) of Ostwald's scientific classics have been received from Mr. W. Engelmann, Leipzig. The volumes contain papers, in German, by Poinsot (1809), Cauchy (1811), J. Bertrand (1858), Cayley (1859), Grotthuss, on electricity and light (1808–1819), Hankel (1870), Dutrochet (1824), Zambonini, Sella, Jacobi, and Toepler (1866–7). Each volume includes editorial notes, as well as reprints or translations of original papers, so that students of science familiar with the German language are provided by Prof. Ostwald's series with a ready means of referring to the works of the old masters and receiving inspiration from them.

The Country Press, of Kensington, London, W., has issued two more packets of nature-study post-cards. One packet includes facsimiles of six British trees in winter; the other provides natural figures of boles of the same trees. The packets are issued at 6*d.* each.

Messrs. J. and A. Churchill have published a fifth edition of "Elementary Practical Chemistry," by Dr. Frank Clowes and Mr. J. B. Coleman. The book is published in two parts, the first dealing with general chemistry and the second with qualitative and quantitative analytical chemistry. In the present edition the whole of the matter has been revised, and alterations and additions have been made.

We are indebted to the publisher, F. Tempsky, of Vienna, for a copy of the fifth edition of Graber's "Leitfaden der Zoologie," edited by Dr. Robert Latzel. This well-known illustrated text-book is intended primarily for use by the higher classes of the middle schools.